

What Is Claimed Is:

1. A method of manufacturing a vertical feed through in a substrate comprising:  
providing an electrical contact cap in a hole in a substrate, wherein the cap extends partially into the hole and partially outside the hole, wherein a portion of the hole is open for insertion of a probe on a second substrate to electrically contact the probe with the cap in the hole.
2. The method of claim 1 wherein the step of providing an electrical contact cap in a hole of the substrate comprises heating the substrate made up of a green sheet of ceramic to form a ceramic material around the cap.
3. The method of claim 2, wherein the cap is pressed into the hole formed in the green sheet prior to heating.
4. The method of claim 1 wherein the cap includes an opening with a resilient spring probe inserted in the opening.
5. The method of claim 1 further comprising plating at least a portion of the hole with an electrically conductive material.
6. The method of claim 1 wherein the cap comprises a laterally protruding portion extending into the substrate to hold the cap within the substrate.

7. The method of claim 1 wherein the cap comprises a first cylindrical region extending outside the substrate having a greater diameter than a second cylindrical region provided in the hole of the substrate, wherein a laterally protruding regions extend from the second cylindrical region to secure the cap within the substrate.

8. A method for manufacturing a vertical feed through in a substrate comprising:  
stacking a first electrical contact and a sacrificial element to enable forming a feed through path;  
forming a dielectric material making up the substrate around the first electrical contact and the sacrificial element;  
removing the sacrificial element; and  
plugging a second electrical contact element into an opening left by the sacrificial element to electrically contact the first electrical contact.

9. The method of claim 8 wherein the step of forming a dielectric material comprises inserting the first electrical contact and the sacrificial element into a hole provided in a green sheet ceramic and heating the green sheet to form a ceramic material.

10. The method of claim 8, wherein the first electrical contact comprises a first portion provided in the hole of the substrate and a second portion extending outside the substrate supporting a probe.

11. The method of claim 10, wherein the probe includes a slot enabling the probe to be spring compressed.
12. The method of claim 10, wherein the first portion includes a portion protruding laterally into the dielectric material to secure the first contact within the hole.
13. The method of claim 10, wherein the first portion includes an indentation for engaging a protrusion from the dielectric material to secure the first contact within the hole.
14. The method of claim 8, wherein the second electrical contact comprises a first portion for engaging the hole in the substrate and a second portion for extending outside the substrate supporting a probe.
15. The method of claim 8, wherein the second electrical contact element comprises a decoupling capacitor.
16. The method of claim 15 further comprising providing a spring clip attached to the substrate to engage the decoupling capacitor to secure the decoupling capacitor within the hole.
17. The method of claim 16 further comprising the step of forming the spring clip in an opening of the sacrificial material prior to removing the sacrificial material.
18. A substrate comprising:

a dielectric layer with a hole extending through the dielectric layer; and  
a first electrical contact having a first portion provided in the hole of the substrate  
securely encapsulated by the substrate and a second portion extending outside the substrate.

19. The substrate of claim 18, wherein the dielectric layer is formed from a green sheet of ceramic.

20. The substrate of claim 18 further comprising:

a second electrical contact comprising a first portion provided in the hole electrically connecting to the first electrical contact, and a second portion for extending outside the substrate supporting a probe, wherein the first portion of the second electrical contact includes an engaging element for securing the second electrical contact within the hole of the dielectric.